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Dark magnetic resonance in an electron-nuclear spin system

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Abstract

Dark magnetic resonance in the solid state is observed and is shown to be analogous to electromagnetically induced transparency in coherent optics. The basis of the two effects is coherent population trapping, which can conveniently be described by the product operator formalism. It is demonstrated that pulse electron paramagnetic resonance experiments on electron-nuclear spin systems provide a simple means for studying the physics of these types of coherence phenomena.